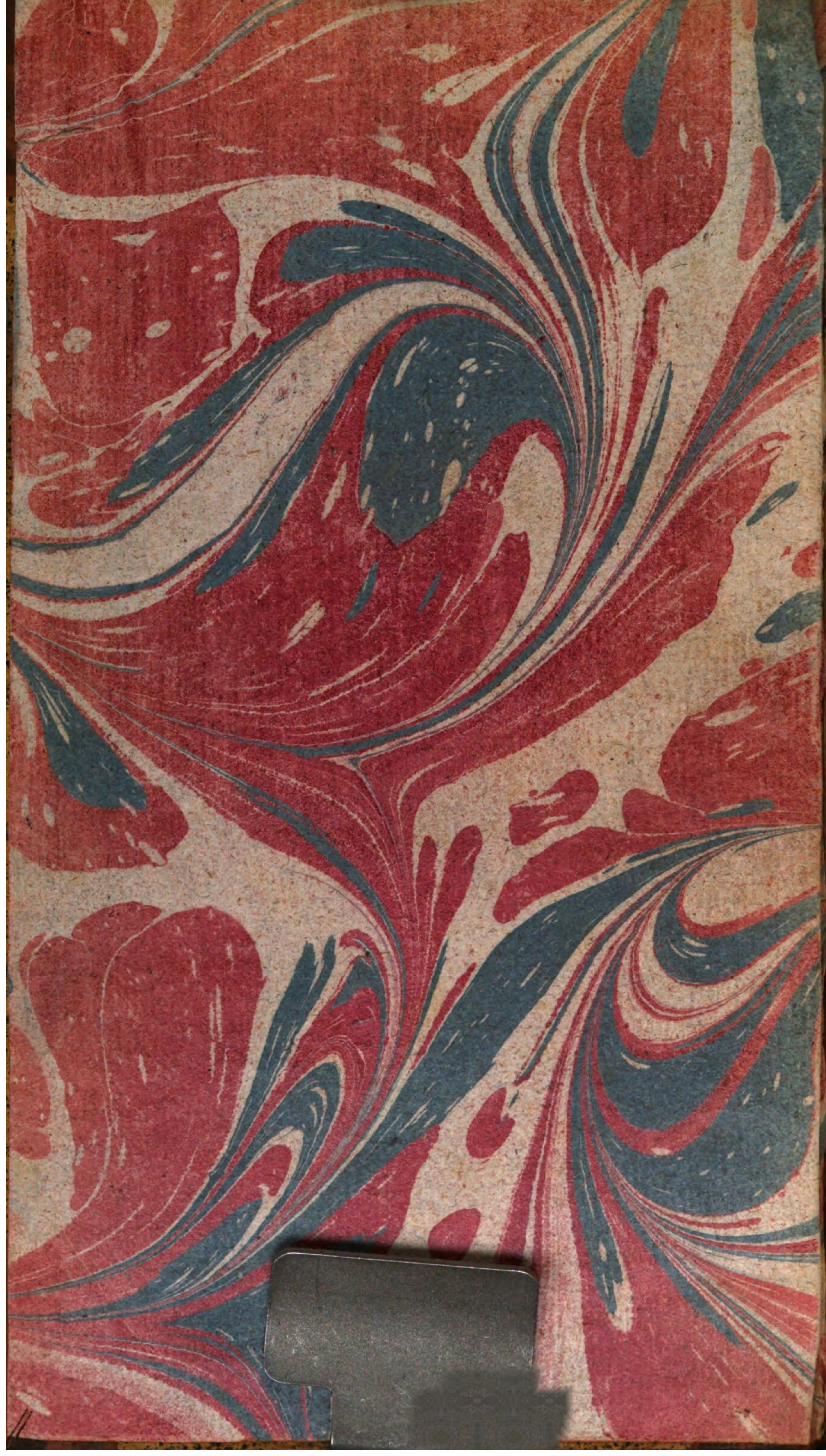


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7.

E L E M E N T S
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F O S S I L O G Y * :

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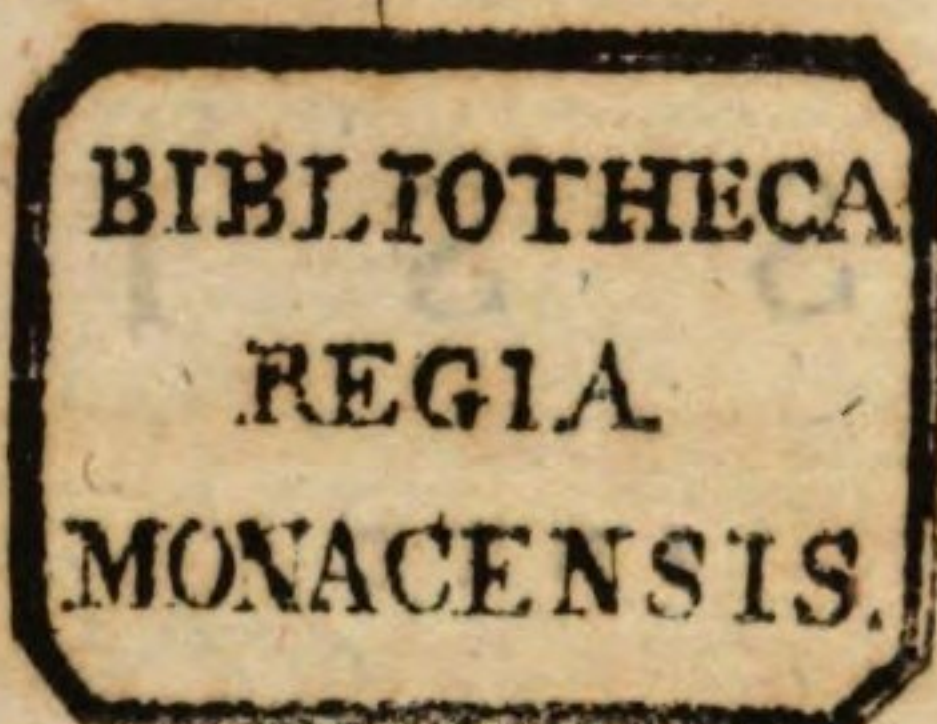
By G E O R G E E D W A R D S, E s q ;

Fidem non derogat error.

L O N D O N :

Printed by B. W H I T E, No. 63, Fleet Street.

M D C C L X X V I .



A D V E R T I S E M E N T.

* *It is a rule of grammar, that no compound word is to be formed of other words; which are of different languages: the terms Fossilogy and Minerology, are a violation of this rule; but we beg leave to make use of one of these terms rather than invent a new one, and we prefer the former to the latter.*

ERRATA.

Ubique	Quartzoze, r. Quartzose.	32	21	Strated, r. Striated.
	Inflamable, r. Inflam- mable.	33	23	Crustrated, r. crustated.
	Arfnic, r. Arsenic.	35	20	Hyacynth, r. Hyacinth.
	Marmoroproferon, r. Marmaroproferon.	44	10	Flus, r. Flufs.
	Dilineate, r. Delineate.	46	14	Clofely, r. Closely
P. 1.		47	18	Eruciformis, r. Ericifor- mis.
12	20 Verdatre, r. Verditer.	52	5	Contentric, r. concentric.
14	4 Gaodæ, r. Geodæ.	52	6	Surounding, r. Surround- ing.
24	12 Section 1. r. before Sp. 1.	54	13	Ophitis, r. Ophites.
28	18 Coyrynthia, r. Corynthia.	72	20	Zins. Bicmuth. r. Zinc, Bismuth.
29	23 Ireland, r. Iceland.	79		Dele paragr. 8th.

To the R E A D E R.

WE confess with this early opportunity, that many faults may be observed in the following treatise, written upon a science, which is involved in more error and obscurity than any other; meaning to anticipate divers censures, by allowing them to be just. The method, which we follow, not unfrequently is new, and therefore, although it should be a just one, cannot be brought to perfection, and established free of errors by a single hand. As our plan of arrangement, and the sources from which we draw the characters of fossils and their arrangements, do not coincide with those made use of by authors, many fossils they have recorded on this account cannot be described, and are in the present treatise omitted. These and many other reasons might be offered, why we are not ashamed in owning this treatise to be imperfect; but we propose, after a period of years, to republish this book more perfect, and enriched with a great number, and a more minute account of individual fossils, if we have the opportunity of seeing, by means of our friends, a sufficient number of specimens; which favour we shall most faithfully acknowledge.

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F O S S I L O G Y

AND ITS

P R I N C I P L E S.

FOSSILOGY is a science, teaching, by the means of method and characters, the knowledge of the different bodies, which are found in the earth, and which have neither animal nor vegetable origin. This definition excludes from Fossilogy the consideration of fossil bodies, which owe their figure and appearance to vegetable and animal bodies, and which many fossilists, from their great good nature have taken under their special protection.

The fossil bodies found in the earth, are very numerous, and the means of knowing and separately distinguishing them are not obvious. Therefore, in treating of them, a proper method,
and

and characters, which shall give a just and distinct idea of all and each of them, are necessary; and the several divisions, which are made according to the method adopted, must be clearly pointed out and expressed. Those great and important desiderata are obtained by means of certain divisions, named Classes, Orders, Genera, Species and Individuals; and by affixing to these proper characters. All fossil bodies, according to this design, are, in the first place, divided into certain classes; each class into orders; every order into certain genera, which consist of the species; under the species the fossils themselves, or, in other words, the individuals are arranged, described, and distinguished from all others. The office of each class is to arrange and to contain those fossil bodies, which have a resemblance to one another, and to separate from them those fossil bodies, which have no resemblance to them; a sufficient number of classes being established to comprehend all different fossil bodies: the office of each order is to divide from the rest, to bring together, and arrange those fossil bodies of the same class, which bear the greatest resemblance; a sufficient number of orders being established to comprehend the whole: the office of the genera is to mark, contain and dispose fossil bodies of the same order, which have a very great affinity to each other, and to separate them from those to which they bear no such analogy: the office of the species is to comprehend, distinguish
and

and sort those fossil bodies of the same genus, which in only a few respects differ from one another: the individuals are the fossils themselves, which are to be described in a manner as correspondent to nature as it is possible. In gaining from such a system a knowledge of any individual, the divisions must be followed in the order they are mentioned, and the characters of the divisions gone over must be combined with the character of the division to which we next proceed: in such an investigation the character of the class gives us some general knowledge of the individual; the character of the order a more particular knowledge of it; that of the genus gives us a great light into it; the character of the species affords a very intimate, and frequently almost a sufficient knowledge of the fossil inquired after; but the individual is the fossil body itself, or its picture as justly drawn, as human description can delineate. The characters of the Class, Order, Genus, and Species, with that of the individual, are to be taken together, and combined, in order to procure a sufficient and a distinct knowledge of any individual fossil. The same individual may sometimes vary from itself in some unessential point, when it is to be called only a variety of the fossil, and is not to be considered as a different one. It remains to observe, that the establishment of the division named Individual is somewhat new in Natural History; the reason of forming it is, that the laws of Me-

thod require it, and that Fossilogy would be lame, confused, and very imperfect, if it wanted this division. We must add in vindication of this Treatise, that it does not engage to treat of the division of individual Fossils.

The choice of characters to note, arrange, and to describe the several divisions made in Fossilogy, is an object of the greatest consequence. They should be drawn from the most steady principles, and determined with all the precision in our power. We draw them chiefly from the following sources, from Chymistry, Structure, Figure, Colour, and the degree of hardness of fossil bodies. Chymistry affords fossilogical characters, which are clear, certain, and of the greatest and most extensive utility; it forms Fossilogy into a more philosophical study; and on many occasions its assistance is indispensably necessary. Yet its application may and has been too far extended; and, when it exceeds certain bounds, it renders Fossilogy abstruse, less useful, complicated, and laborious. The structure or texture of fossil bodies frequently is of great service in supplying useful and valuable fossilogical characters, and is never to be disregarded. The figure of fossil substances cannot be too much attended to. Colour at first view may appear vague, and insufficient to afford proper characters; but in characterising and describing the species and individuals of fossil bodies, colours are of the greatest service, and

and deserve the most careful consideration. The difficulty of fixing upon proper names to express them, may be got over by paying attention, which never yet has been done, properly to know and distinguish colours, and by finding out various colours, which are uniformly and constantly observed in the works of nature, and which bear a resemblance to the colours of fossil bodies, and comparing them together. Greater diligence and strictness in the application of names to colours, may render them very serviceable in Fossilogy: and censures thrown out against their use, frequently are not so just as they are specious. The degree of hardness of fossil bodies not seldom is of great importance in affording proper fossilogical characters. There are many particular observations, relative to the application of characters drawn from the above sources. Structure is of four kinds: 1. The Solid Structure, in which no granules or particles are present, although a fossil body of a solid structure may be composed of several pieces, and yet not be on this account of a different structure. 2. The Granulated. 3. The Fibrous. 4. The Laminated; which consists of laminæ of different sizes and extent, and which sometimes can only be said to be scaly: the structure of the laminæ is either solid or granulated; and their thickness greatly varies. These four different structures are well marked in nature, and may be depended upon as proper characters to describe and distinguish the methodical divisions

divisions and the individual fossils, which occur in Fossilogy. Yet a little obscurity and doubt in ascertaining proper fossilological characters, will sometimes occur in examining this as well as the other sources from which we draw them: thus the different structures may sometimes be blended together; one structure may not be sufficiently distinguished and separated from another; a few granules may be mixed in a fossil of a real solid structure: but a proper and accurate examination, and the fixing upon that structure, which is most predominant, will remove all such doubts and difficulties. The figures of fossil bodies are many and various, but only those, which are regular and determinate, can be admitted: ex. gr. a quartzose chrystal of a round shape frequently occurs, which we shall not consider as a figured body, since its figure is very different from a perfect one; for instance, one, which is spherical. Several pages might be written upon the cautions and niceties, which are to be observed in making use of colours, as fossilological characters; but we shall scarce offer more than one observation, which is relative to the colours of metals. There is a colour frequently occurring in metals and their ores, which has yet never been named. It is not blue, it is not white, nor is it black. Its different shades sometimes nearly approach to the different shades of the three colours above mentioned, but they really are perfectly distinguished and separated from them. This colour, which

we

we shall distinguish, and call the unnamed colour of metals, is present in lead, whose colour cannot be said to be black, blue, or white. From the great application it admits of, and from the necessity of making use of it, we shall establish this colour in the manner above proposed, when we come to treat of metals and their ores. The unnamed colour of metals on exposure to the air frequently becomes tarnished, but reappears upon cutting afresh, as we frequently see in the glass copper ores; and the shades of it, like the other colours of metals, are many and various. All the colours of metals have something peculiar and distinct from the same in other fossil bodies, which particularity may be called metallic. When we use the term colourless, the body, to which it is applied, must always be understood to be transparent; and a purple colour is brought under a blue one. We shall draw our fossilological characters from the several sources, that afford them, accordingly as these are best suited to the ascertaining, arranging and describing of the several methodical divisions and individual fossils, which occur in Fossilogy. Yet there never will exist a system of Fossilogy, established upon arrangements, and these denoted with characters, both of which are so just, so applicable to nature, and so universal, that every single individual can be referred to and manifested by them; but the similarity of a single fossil, whose place and character is doubtful and not manifested,

tested, with the fossil bodies, to which it is intimately allied, and whose place and character is well known, or its possessing in part the characters that denote its place, will infallibly lead it to its proper home. Ex. Gr. There is an agate, which is of a red colour, but, being opaque, will not answer to the character given of agate; yet I perfectly know both it and its place, from its similitude to other fossil bodies which answer to the character of agate: or, if this test is not sufficient, I hold it to the light, and discern in it many spots, which perfectly correspond to the character of Agate, and therefore no doubt can remain concerning it. The reader must always be aware, that in each and every character of all the methodical divisions which we have established, there is, *cæteris paribus*, something peculiar and distinct from all other characters, which distinguishes one class, one order, one genus, one species, and one individual from all other classes, orders, genera, species, and individuals; but in an express manner to compare, and verbatim to point out the distinctions between these, would be an endless task, and generally may as well be omitted in toto, as in parte.

F O S S I L O G Y.

9

The CLASSES and ORDERS

F O S S I L O G Y.

Class I. Earths.

Class II. Stones.

Order I. Calcareous stone.

Order II. Quartzose stone.

Order III. Fluor.

Order IV. Gypsum.

Order V. Stone of a solid structure, named
Petra.

Order VI. Stone of a granulated structure,
named Saxum.

Order VII. Stone of a laminated structure,
or laminated Stone.

Order VIII. Stone of a fibrous structure,
or fibrous Stone.

Order IX. Stone, composed of a matter,
which is not gritty; or gritless Stone,
if we may be allowed to adopt the term
gritless.

Order X. Stones essentially consisting of
more kinds of Stone than one; or com-
pound Stones.

Class III. Inflammables.

Class IV. Metals.

C

Class

Class V. Cryptometalline fossils.

Order I. Cryptometalline Stones.

Order II. Cryptometalline Earths.

Order III. Cryptometalline Foss.

Class VI. Salts.

Order I. Acids.

Order II. Alkalies.

Order III. Metallic neutral Salts.

Order IV. Earthy neutral Salts.

Order V. Alkaline neutral Salts.

Class I. Earths.

Ch. Fossil bodies, whose component parts imbibe water; and which either fall into a loose mass, or, when gently rubbed between the fingers, are divisible, after they have been soaked a sufficient length of time in water.

N. B. Both earths and stones are in chymistry termed earths; but that they should be separated, and distinguished by name is absolutely necessary in Fossilogy; therefore, accordingly as fossil bodies answer to the definitions given by us of earths and stones, we shall consider, and name them as such. The ochres are excluded from this class, and referred to that of the Cryptometalline fossils.

There often are heterogeneous matters mixed in small quantities with the fossil bodies of this class: thus a small portion of sand is often found in clay; but this circumstance is only accidental, nor is it of such importance, as to affect the Genera.

Genus I. Clay.

Character. An earth soft, very ductile, and tenacious, when moist; and rendered very hard by fire.

Sp. I. Of a white colour.

Example. An individual of a dull whitish colour; and glossy and smooth. Ex. 2. An individual, of a fine white colour; and very glossy, and smooth.

N. B. We describe, and offer, as examples a few individual fossils to confirm, and elucidate the species; and we take little further pains with the individuals, than is necessary for this purpose.

Sp. II. Of a blue colour.

Ex. An individual, which is very common, of a deep blue colour.

Sp. III. Of a green colour.

Ex. An individual, of a deep green colour, and named the verdatre. Ex. 2. An individual, of a light green colour.

Sp.

Sp. IV. Of a yellow colour.

Ex. An individual, of an elegant yellow colour, and found in Oxfordshire.

Sp. V. Of a red colour:

Ex. An individual, of a red colour; strong and compact; and found in Hampshire. Ex. 2. An individual, now in being rendered soft by water; of a pink colour; and found in Scotland.

Sp. VI. Of a black colour:

Ex. An individual, which is the *argilla nigra ponderosa* of Dacosta, whose lectures we highly respect, as the key to the science of Fossilogy.

Sp. VII. Of a brown Colour:

Ex. An individual, of a brown colour, and found at Harwich.

Sp. VIII. Of an ashen colour.

Sp. IX. Stone Clay; being of a hardness, and compactness, equal to that of stone, which it resembles in every appearance; but possessing the

the properties of clay, when sufficiently soaked with water.

Sp. X. Clay, under particular forms and shapes which are frequently named *gaodæ*.

Many of the *gaodæ* are shaped like ginger; some are very solid and hard; some are of a laminated structure; and others are hollow. Certain small polygonal bodies, of a reddish colour, found in the Archipelago, are to be referred to this species.

Genus II. Steatites, or soap rock.

Ch. An earth, glossy; very smooth, unctuous, and resembling hard soap; and readily falling down in water, when it possesses no kind of ductility, nor any grittiness.

Sp. I. Of a white colour.

Sp. II. Of a red colour.

Sp. III. Of a yellow colour.

Sp. IV. Of a green colour.

Genus

Genus III. Noneffervescent chalks:

Ch. Earths, which are of a close texture; easily reduced, and generally rubbing, on being touched, into a fine subtile powder, which very much colours the hands.

Sp. I. Of a red colour,

Ex. Individuals, which are named tripolies, and are of a pink colour, of various shades.

Sp. II. Of a black colour.

Ex. An individual, of a black colour; compact in structure; freely colouring the hands; and found in Switzerland.

Sp. III. Of a white colour.

Ex. An individual, of an elegant snow-white colour; of a close texture; colouring the hands; and found in Germany, and America.

Sp. IV. Of a brown colour:

Ex. An individual, named Terra Cariosa, or rotten stone.

Genus

Genus IV. Virgin earth:

Ch. An earth consisting of particles, loosely constructed together; being the proper nourishment of vegetables; rough, and not smooth; and neither reducible into a fine subtile powder, nor colouring the hands, like the chalks.

N. B. Virgin earth is found uncompounded with other fossil bodies.

Sp. I. Of a brown colour.

This species is very common.

Sp. II. Of a red colour.

Sp. III. Of a black colour.

Ex. An individual, of a black colour; said to be a common vegetable mould; and is the soil so much cried up for its fertility, by some writers on agriculture.

Genus V. Calcareous earth.

Ch. An earth, which effervesces with acids:

N. B.

N. B. A slight effervescence with acids, owing only to a mixture of a small quantity of calcareous matter, does not constitute an earth to be of this genus.

Sp. I. Of a white colour.

Ex. An individual, which is the common white chalk. Ex. 2. An individual, named lac lunæ, or, agaricus mineralis; of a fine white colour; very light; colouring the hands; and found in the form of a farinaceous powder, tho' sometimes concreted into a mass.

Sp. II. Of a red colour.

Ex. An individual, of a red colour; named lac lunæ, or agaricus mineralis; resembling that of species first; and found in Gottland.

Sp. III. Of a yellow colour.

Ex. An individual, of a yellow colour; named lac lunæ, or agaricus mineralis, and resembling that of species, first and second; and found in Timmerdala, at Westergottland.

Sp. IV. Of the structure and hardness of stone, which it resembles in every appearance; but falling down, when kept a sufficient time in water.

D

Ex.

Ex. Individuals, named stone marle, used for fertilizing lands.

Sp. V. Depositions of calcareous earth into particular forms, by means of water.

Ex. An individual, named osteocola, being a deposition of calcareous earth, upon branches and roots of vegetables and trees.

Sp. VI. Bezoar mineralis; consisting of concentric crusts; and of a globular shape. There are other fossil bodies, called mineral bezoars, which come under different parts of this system.

Genus VI. Boles.

Ch. Earths, readily falling down into a loose mass in water; having a degree of ductility, when not pervaded with too much water; and smooth, and rather unctuous to the touch.

N. B. Boles, which fertilize land, are called marles. The terræ figillatæ are to be excluded from fossilogy.

Sp. I. Of a red colour,

Ex. An individual, named the Lemnian bole, of a pink colour. Ex. 2. An individual, of a red colour; much resembling the foregoing; and used as a marle in Cheshire.

Sp. II. Of a brown colour.

Ex. An individual named the fuller's earth.

Sp. III. Of a yellow colour.

Sp. IV. Of a green colour.

Sp. V. Of a white colour.

Ex. An individual, of a white colour; effervescing with acids; and found at Montmartre nigh Paris, where it is used as a marle.

Genus VII. Loams.

Ch. Earths, of a granulated structure; rough and harsh to the touch; consisting of a large portion of sand, which is combined with clay, or with virgin earth, and often with divers other substances.

N. B. The sandy soils, well known in husbandry, but little noticed in books of fossilogy, probably will arrange under this genus.

Sp. I. Of a green colour:

Ex. An individual, found in Oxfordshire.

Sp. II. Of a yellow colour.

Sp. III. Of a brown colour.

Ex. An individual, named the Windsor loam.

Sp. IV. Of rather a black colour. Da Costa.

Sp. V. Of a greyish white colour. Da Costa.

Genus VIII.

An earth, consisting of a large portion of clay, which is combined with sand, or virgin earth, and frequently mixed with other substances, as calcareous earth; not so harsh and rough, as the loams; not ductile, when moist, like clay; and wanting the character of boles:

N. B. We propose this genus, though it is not mentioned by fossilogists, because we believe,

lieve, that it is a common mould, and well known to farmers, and because we wish to make fossilogy useful to agriculture; but we do no more than barely to propose it.

Class II. Stones.

Ch. Fossil bodies, whose component parts do not imbibe water; and which neither fall down into a loose mass, nor, when rubbed gently between the fingers, are divisible, after they have been soaked a sufficient time in water; without inflamability; containing no metal, at least no further quantity than barely tinges them; and without a saline taste, and solubility in water.

Order I. Calcareous Stone.

Ch. Stone, effervescing with acids; burning into quick-lime; and not striking fire with steel.

N. B. When calcareous stone is either transparent or figured, it is with propriety called spar; which name we apply to calcareous stone, when it is either transparent or figured, but in other cases we retain the name of the order. Calcareous matter is sometimes earthy, and sometimes stoney; both which states are quite distinct in fossilogy. A slight effervescence with acids, owing only to a mixture of a small quantity of calcareous matter, does not constitute a stone to be of this order. The four first genera of this order, generally are found in large strata;

strata ; and many of the individuals of these genera have been used in building, and in consequence thereof falsely considered and arranged, as of the same nature with the common stones employed for that purpose ; although their separation makes the knowledge of them much more plain and easy.

Genus I. Calcareous stone of a granulated structure.

Sp. I. Of a red colour.

Sp. II. Of a blue colour.

Sp. III. Of a white colour.

Ex: An Individual, named Portland stone ; and consisting of fine granules.

Sp. IV. Of a brown colour.

Ex: An individual, named Ketton stone.

Sp. V. Of a black colour.

Ex. An Individual, of a black colour ; containing inflammable matter, the feter of which can easily be excited ; and being one of the lapides suilli of authors.

Genus

Genus II. Calcareous stone of a solid structure.

Sp. I. Of a blue colour.

Sp. II. Of a white colour.

Sp. III. Of a grey colour.

Sp. IV. Of a black colour.

Sp. V. Of a red colour.

Genus III. Marble.

Ch. Calcareous stone, neither transparent nor figured, but capable of a fine polish, and beautifully coloured.

Sp. I. Of a white colour.

Section I. Marbles, having either one or two colours; and that, which is most predominant, is to form the species.

Ex. An individual, which is the common white marble, for the most part composed of granules, which are of different sizes; and, when these are the largest, the marble frequently is called the saline.

Sp. II. Of a black colour.

The individuals of this species are often set with shells, Coralloids, &c.

Sp.

Sp. III. Of a red colour.

The antique red, and of a solid structure, is the chief individual.

Sp. IV. Of a brown colour.

Sp. V. Of a green colour.

Ex. An individual, which is the Egyptian marble : it is of a greenish colour, with a mixture of white : its substance is not uniform ; some part of it not being calcareous.

Sp. VI. Of a yellow colour.

Ex. An individual, named the Sienna marble, and found in Italy.

Sp. VII. Of a grey ashen colour.

Section II. Variegated marbles, having three or more different colours.

N. B. The individuals of this section ought to be described in the room of the species, which we therefore omit. This remark is applicable to the following section ; as also to some other parts of this system.

Section III. Marble, composed of different
E pieces,

pieces, which are inlayed among one another; though these pieces are not always calcareous.

Genus IV.

Calcareous stone of a laminated structure, and not formed from deposition by water. Or calcareous slate.

Sp. I. Of a white colour.

Sp. II. Of a blue colour.

Sp. III. Of a red colour.

Sp. IV. Of a yellow colour.

Sp. V. Of a brown colour.

Genus V.

Calcareous stone deposited by water, into plates or laminæ, which affect the figure and the direction of the body, on which they are deposited, being distinguished from the foregoing genus by being found near springs and rivers, abounding with calcareous matter, or by taking the figure, or direction of some particular body.

Sp. I. Of a brown colour.

Ex. Individuals of an earthy opaque brown colour.

Sp.

Sp. II. Colourless.

Ex. Individuals, which are semitransparent and are spar; and by water carried into, and filling veins of various kinds of stones.

Sp. III. Of a white colour.

Ex. Individuals, being spar; filling up veins of stones; and being carried thither by water.

Ex 2. An individual, being an incrustation of a white colour, and opaque; and found in the waters at Carlesbad.

Sp. IV. Of a yellow colour.

Ex. An individual, videlicet, the septum of the *Ludus Helmontii*.

Sp. 5. Of a red colour.

Ex. An individual, found in the waters at Carlesbad; consisting of thin laminæ regularly placed above one another; and of a brownish red colour, though some of the laminæ are of a white one; and admitting a fine polish, and gloss.

Sp. V. Osteocolla; being incrustations upon the roots, branches, twigs of trees and vegetables; and of a cylindrical form.

Genus VI.

Calcareous stone, or Spar of the figure of vegetable bodies.

N. B. It will be too difficult to exclude from this genus all such fossils, as really owe their figure to deposition on vegetable bodies, though only such as are of a natural figure resembling vegetable bodies, are meant to be comprehended under this genus.

Sp. I. Flos ferri; being composed of ramifications, resembling white coral; frequently of a most elegant white colour, and sometimes so exquisite, as to be the most lovely picture of innocence and beauty; being properly a stalactite; and found in Styria, Corynthia, Alsatia, &c.

Sp. II. Colliflower spar, so called from its resemblance to that body.

Sp. There are many different species of this genus, which we shall not enumerate.

Genus

Genus VII.

Unfigured spar; or calcareous stone, which is transparent, and is not figured.

Sp. I. Of a solid structure.

Sp. II. Of a granulated structure.

Sp. III. Of a laminated structure.

Sp. IV. Of a fibrous structure.

Ex. An individual, of a fibrous structure; colourless; and found in Arken-dale, in Yorkshire. Ex. 2. An individual, of a whitish colour; having longitudinal fibres, which branch out lateral ones, dilineated upon it; being one of the flos ferri, so named, of authors; and found in the county of Durham. Ex. 3. An individual, agreeing with the last, except that its longitudinal fibres branch out no lateral ones.

Genus VIII. Rhombic Spar.

Ch. Calcareous stone, being either of a rhombic figure, or breaking into fragments, which are of that figure.

Sp. I. Colourless.

Ex. An individual, of a perfect transparency; refracting lines double; and found in Ireland.

Sp:

Sp. II. Of a white colour,

Sp. III. Of a red colour.

Sp. IV. Of a black colour.

Genus IX. Pyramidal spar.

Ch. Calcareous stone, of a pyramidal figure.

Sp. I. A pyramid of six sides.

The individuals of this species generally are nearly colourless; they sometimes are opaque: and the pyramids are of various sizes. There is one particular individual, consisting of two pyramids, joined by their bases, which union is called a perfect figure; each pyramid having six sides; and with six planes, one at every common angle of the two pyramids.

Sp. II. A Pyramid of three sides.

There is one particular individual, which is of a perfect figure; of a lenticular form; each pyramid consisting of three sides; and the common base of the two pyramids being cut into six planes.

Sp. III. An irregular pyramid.

Ex. An individual, named the dog's tooth-spar.

Genus

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Genus X. Columnar spar.

Ch. Calcareous stone, of the figure of a column.

Sp. I. A column of six sides.

Sp. II. A column of three sides.

Sp. III. Irregular columns.

Ex. Individuals, consisting of columns, whose diameters are not of an uniform thickness; with ends obliquely truncated; sometimes colourless; and sometimes of a black colour, and then called lapides fuilli.

Genus XI.

Columnar, and pyramidal spar:

Char. Calcareous stone, consisting of a column and pyramid.

Sp. I. Of a trigonal pyramid, and trigonal column.

Sp. II. Of a trigonal pyramid, and hexagonal column.

Genus XII. Polygonal spar:

Ch. Calcareous stone, being polygonal; having determinate sides, which are various in number;

and being neither of a pyramidal nor columnar figure.

Genus XIII.

Ch. Spar, or calcareous stone, of a figure, which has only one angle.

Sp. I. Formed of two planes, intercepting an angle, like the two sides of a triangle.

Sp. II. Of the form of a wedge.

Genus XIV. Spherical spar.

Ch. Calcareous stone, of a globular figure.

Sp. I. Of a white colour.

Ex. An individual, glossy, and of a white colour; composed of spherical crusts; of a perfect spherical figure; and named the pisolithus, or pea-stone; and found in a sparry incrustation, at Carlsbad.

Sp. II. Of a grey colour.

Sp. III. The stalagmites; of a globose figure; deposited by water, falling from stalactites; and of a structure, which generally is strated.

Sp.

Sp. IV. The maiden paps, so called; of a globular figure; of a hard and compact structure; of a white brown colour; and found at Tunstall, in the county of Durham.

Genus XV. Stalactite.

Ch. Calcareous stone, running into no considerable length; hanging from the roofs of caverns, veins, &c.; and deposited by water.

Sp. I. Having a cylindrical tube and shape.

The individuals generally are transparent and pure, and often consist merely of a cylindrical tube: they sometimes are externally beset with large granules; they sometimes are impure and opaque, consisting of a coarse matter, of a brown colour.

Sp. II. Of a laminated structure.

Ex. An individual, pretty much transparent; of a colour, which is chiefly yellow, tho' sometimes the individual is colourless; and between the strata, having rings of a white colour, and opaque. Ex. 2. An individual, of an elegant white colour, opaque, and resembling ivory; and of a crustrated structure.

Sp. III. Of a conical, and not of a cylindrical shape; nor of a laminated structure.

The structure of the individuals is fine or coarse; sometimes solid, at other times granulated; they are colourless, and of a red, a yellow, and an opaque earthy colour.

Order II. Quartzose stone, or Quartz.
Ch. Fossil bodies, striking fire with steel; and either transparent, or figured; and of a solid structure.

QUARTZOZE CHRYSTAL.

Ch. A quartzose stone, which is well distinguished from the other fossil bodies of this order; being never properly invested with an outward crust; clearer than flint and agate; frequently figured, agate and flint never or seldom having proper figures; not breaking in ringlets like flint, and wanting the delicate appearance of agate; and being, by the character of the order, distinguished from all other fossil bodies.

N. B. Quartzose chrystal consists of many different genera, comprehended under this order. Quartzose chrystal, of a granulated structure, is brought under order vi. of class ii.

Different

Different sorts of quartzose chrystal frequently are called precious stones; the reason for this distinction being chiefly on account of their beauty and hardness: for they have great lustre; and many of them are so hard, that they cannot be touched by the file. Yet upon this, or any other distinction, to consider precious stones as different bodies from quartzose chrystal, and to arrange them accordingly, is contrary to nature, and all the laws of arrangement.

Quartzose Chrystal, possessing an eminent degree of lustre, beauty and hardness, is called ruby, when it has a fine red colour, and preserves it in the fire; sapphire, when it has a bright blue colour; topaz, when it has a beautiful golden yellow colour; emerald, when it has a fine green colour; chrysolite, when it has a dusky green colour, with a cast of yellow; amethyst, when it has a violet colour; garnet, when it has a deep red colour; hyacinth, when it has rather a deep red colour, approaching a flame colour; and beryll, or aquamarine, when it has a sea, or bluish green colour. These are nine of the ten precious stones; the diamond is the tenth.

Quartzose chrystal, which is superior to all other precious stones, in its pellucidity, lustre, beauty and hardness, and which attracts its foil, is called

diamond; and is of various colours. All the precious stones admit various shades in their particular colours.

Genus I.

Quartzoze chrystal, which is impure, and not so pellucid, as to be semitransparent; and which is not figured.

N. B. This genus is sometimes found composed of several pieces conglutinated together.

Sp. I. Of a red colour.

Sp. II. Of a brown colour.

Sp. III. Of a green colour.

Sp. IV. Of a yellow colour.

Sp. V. Of a white colour.

Sp. VI. Of a black colour.

Genus II.

Unfigured quartzoze chrystal, which is pure, and transparent.

The diamond frequently belongs to this genus.

Sp. I. Colourless.

Sp. II. Of a green colour.

The

The beryll generally pertains to this species.

Sp. III. Of a brown colour.

Sp. IV. Of a yellow colour.

The topaz frequently belongs to this species.

Sp. V. Of a white colour.

Sp. VI. Of a red colour.

The garnet sometimes is of this species.

Sp. VII. Of a blue colour.

The saphire generally is of this species, as also the amethyft.

Sp. VIII. Of a black colour.

Genus III.

Quartzoze chryftal, of a pyramidal figure.

Sp. I. A pyramid, of fix fides:

It is very common; and it sometimes is a perfect figure. The amethyft frequently belongs to this species.

Sp. II. A pyramid, of four fides.

The emerald, from Carthagenæ, is faid some-
times

times to be of this species; being a perfect figure; and detruncated, and foul.

Sp. III. A pyramid of eight sides.

A query arises, whether this species exists. It is said, that the diamond is sometimes in a pointed octohedral form. I have seen a perfect figure of chrystal, each pyramid having eight sides, which, towards the apex, were joined two and two together, into only four sides.

Genus IV.

Quartzoze chrystal, of a columnar figure.

The emerald, and ruby, are the only sorts of chrystal, which are found among writers, corresponding to this genus.

Sp. I. Of a column, of four sides.

The emerald is said to be sometimes of this species.

Sp. II. Of a column, of six sides.

The emerald, from Peru, is said to be a prism of six sides.

Sp.

Sp. III. Of a column, with many determinate sides; but which are various, and anomalous, in regard to number.

Ex. The Brazil emerald, with sides deeply furrowed.

Sp. IV. Of a cylindrical column.

The emerald is said, sometimes, to be of this species.

Genus V.

Quartzoze chrystal, consisting of a column and pyramid.

Sp. I. Of an hexagonal column, and an hexagonal pyramid.

This species is very common; the individuals are generally very pure and pellucid, but sometimes foul and opaque. The figure, sometimes is perfect, consisting of an hexagonal column, with an hexagonal pyramid at each end. The topaz sometimes is of this species, and of a perfect figure. The garnet sometimes is of this species.

Sp. II. Of a quadrilateral pyramid, and a quadrilateral column.

A topaz, of this species is mentioned; also a chrysolite, which is a perfect figure.

Sp. III. A column, of eight sides, with a pyramid of seven.

A topaz is the only one I know mentioned to be of this species. Four of the prisms are broad, and distinct; the other four are very narrow. The pyramid consists of seven facets, the uppermost of which is a lengthened hexagon plane, and the other six, which form the pyramid, are of various figures.

Sp. IV. Of a column of four sides, and a pyramid of twelve facets.

This species is only known in the ruby, and the prisms are very much furrowed.

Genus VII.

Polygonal quartzose chrystal.

Ch. Chrystal, being polygonal; having determinate sides, which are various in number; and neither of a pyramidal, nor a columnar figure.

The

The diamond frequently belongs to this genus.

Sp. I. Of a red colour.

The garnets often are of this species, consisting of a various number of facets: as also the ruby, which is often found in octagons, like alum.

Sp. II. Of a blue colour.

The amethyst frequently is of this species: also sometimes the sapphire.

Sp. III. Of a green colour.

The chrysolite is said often to be of this species.

Sp. IV. Colourless.

Genus VII.

Quartzose crystal, of a cubic figure.

The diamond is said, sometimes to be of this genus; also the emerald, and amethyst: but the existence of the genus may be doubted.

Genus VIII. Flint, or silex.

Ch. Quartzose stone, very hard and compact; of a solid structure; always invested with an
 G outward

outward crust; and either transparent, or semi-transparent:

Sp. I. Of a black colour.

Sp. II. Of a brown colour.

Sp. III. Of a grey colour.

Sp. IV. Of a blue colour.

Sp. V. Of a yellow colour.

Sp. VI. Of a white colour.

Genus IX. Agate.

Ch. A Quartzose stone, which possesses all the characters of flint; accompanied with an elegant and delicate appearance.

Sp. I. Colourless.

Ex. An individual, which is the common agate.

Ex. 2. An agate, which interiorly is thick set with an appearance of bubbles.

Sp. II. Of a red colour.

This species generally is known by the name of the cornelian; which term is very improperly applied to agates, of any other colour.

Sp:

Sp. III. Of a white colour.

Ex. An individual, named the chalcedony, which is a fine delicate agate; of a milk-like colour; and only somewhat transparent.

Sp. IV. Of a yellow colour.

Sp. V. Of a blue colour.

Sp. VI. Of a brown colour.

Sp. VII. Of a green colour.

Sp. VIII. Agate, remarkably altered in colour, as it is moved in the light.

Ex. An individual, the Cats-eye agate; so called from its resemblance to the eye of that animal; and of a greenish colour. Ex. 2. An individual, named the opal.

Sp. IX. Mocoa agate; being agate, interspersed with arboresecent delineations.

Sp. X. Onyx agate, composed of agate matter, of two different colours, which run in lines, having the same direction; both colours, sometimes, being transparent; both sometimes opaque; and sometimes the one transparent, and the other opaque.

The fortification and the anular agate are two individuals of this species; the lines of the latter, in which the colours run, being circular; those of the former having a great resemblance to the lines of a fortification. The sardonix is an individual of this species; this name is given to an onyx, when its colours are red and white.

Sp. XI. Agate, spotted, of different colours:

Order III. Fluor, or flus.

Ch. Fossil bodies, which strike not fire with steel; effervesce not with acids; very readily are brought into fusion, either by themselves, or when mixed with certain other earths and stones, especially the calcareous; and more easily brought into fusion, under similar circumstances, than the fossil bodies, with which they can be confounded.

N. B. There is a particular kind of fluor, which dissolves very slowly, but without any effervescence, in acids, as in oil of vitriol and spirit of nitre. Cronsted. This is called zeolites, which, as belonging to the fluors, we shall call zeolites fluor.

Genus

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Genus I.

Opaque and unfigured fluor.

Sp. I. Of a brown colour.

Ex. An individual, of a brown colour; of an earthy appearance; found in Derbyshire, and often called cauk. Ex. 2. An individual, which is a marmor metallicum, as described in the next species, but is of a brown colour.

Sp. II. Of a white colour.

Ex. An individual, frequently called marmor metallicum; of a white colour, with a cast of brown; and composed of laminæ, closely set together.

Sp. III. Of thin plates, in little separate fasciculi.

Ex. An individual, of a brown colour.

Genus II.

Transparent and unfigured fluor.

Sp. I. Colourless.

Sp. II. Of a blue colour.

Sp.

Sp. III. Of a red colour.

Sp. IV. Of a yellow colour.

Sp. V. Of a green colour.

VI. Of a black colour.

Genus III.

Fluor, in the form of planes, standing parallel to one another; presenting edges, which are cut and determined; and detached from each other.

Sp. I. Of a white colour.

Sp. II. Colourless.

Sp. III. Of a globular shape, and resembling a small ball; composed of planes, which are closely joined together, but outwardly appear distinct, like small lines or threads.

Genus IV.

Figured fluor, with regular sides, which are perfectly square, and then the figure of the fluor is a cube; or with regular sides, which are perfectly rectangular, and then the figure of the fluor is like that of a slab, it being rectangular, and the length much greater than the depth; or with

regular fides, which are accurately rhomboid, and then the figure of the fluor is like that of rhombic spar.

Sp. I. Colourless.

Sp. II. Of a blue colour.

Sp. III. Of a green colour.

Sp. IV. Of a red colour.

Sp. V. Of a yellow colour.

Sp. VI. Of a white colour.

Sp. VII. Of a black colour.

Genus V. Columnar fluor.

Ch. Fluor, of a columnar figure.

Ex. An individual, mentioned by Cronsted, which is prismatical and truncated.

Genus VI.

A fluor, in configuration resembling vegetables.

Ex. An individual, named fluor eruciformis.

Genus

Genus VII.

A fluor, of a pyramidal figure.

Sp. I. A pyramid of three sides.

Ex. An individual, of a brown colour, composed of fibres, which are so disposed, as to form a pyramid of three sides.

Sp. II. Of a pyramid of four sides.

Order IV. Gypsum, or plaister stone, or Parget.

Ch: Fossil bodies, which cut and scrape easily; in the fire readily fall or calcine, but with water concrete again into a mass, which soon becomes hard.

N. B. Gypsum, properly speaking, is a chymical salt, which wants the properties of salts, so called in fossilogy. See the article gypsum, under the class of salts.

Genus I.

Gypsum of a laminated structure.

Sp. I. Glacies mariæ; composed of laminæ, which are large, thin, and easily separable.

Ex.

Ex. An individual, which is colourless, and found in Switzerland.

Sp. II. With a superficies divided, and covered with numerous impressions of little shining planes; but of a structure, which is not really laminated. This species is generally of a white colour.

Genus III.

Gypsum, of a solid structure.

Sp. I. Of a white colour.

Ex. An individual, which is called a white alabaster; clear and transparent; and found in Persia. Ex. 2. An individual, called an alabaster; opaque; and found in Italy.

Sp. II. Of a yellow colour.

Ex. An individual, called an alabaster; of a yellow colour, and transparent.

Genus IV.

Gypsum, of a granulated structure.

Sp. I. Colourless; being composed of glossy shining colourless granules.

Sp. II. Of a brown colour.

Ex. An individual, composed of shining brown granules, and found at Montmartre, near Paris.

Sp. III. Of a white colour.

Ex. An individual, of a white colour, and composed of shining granules. Ex. 2. An individual, of a white colour; opaque, and not glossy; of a compact granulated structure.

Genus V.

Gypsum, of a fibrous structure.

Sp. I. Colourless.

Sp. II. Of a white colour.

Sp. III. Of a brown colour.

Sp. IV. The radiated; consisting of radii, proceeding from one centre; glossy, and coloured with a particular yellow tinge; sometimes the shape is flat and circular, but generally it is more or less globular; and only found in the island of Sheppy.

Genus VI. Selenites.

Ch. Gypsum, of regular figures.

Sp. I. Of a rhombic figure.

The sides are often double. The individuals generally are transparent.

Sp. II. Of the figure of a column.

The column almost always consists of six sides.

Sp. III. Of two convex surfaces opposite each other, which we call the top and bottom. The ends are angular: the sides are two, and sometimes very broad, and sometimes are wanting.

Sp. IV. Of the form of stalactites, being really such.

Sp. V. Of the form of the head of an arrow.

Ex. An individual, which is yellow and transparent.

P

Order V. Petra.

Ch. Stone, of a close solid structure; and wanting the characters of the other orders of this class.

Genus I. Pebble.

Ch. Petra, admitting a very fine polish; composed of a flinty matter, and of great hardness; opaque; invested with an outward crust; and frequently marked with concentric rings, surrounding a nucleus.

Sp. I. Of a brown colour.

Sp. II. Of a yellow colour.

Sp. III. Of a red colour.

Sp. IV. Of a white colour.

Sp. V. The variegated.

Genus II. Jasper.

Ch. Petra, of an appearance, which is very dull and opaque, but bearing a fine polish; and of great hardness, and compactness.

Sp. I. Of a red colour.

Sp. II. Of a green colour.

Sp. III. Of a black colour.

The lapis lydius is a black jasper.

Sp. IV. Of a yellow colour.

Sp. V. Of a white colour.

Sp. VI. Variegated jasper.

Genus

Genus III. Petrofilex, or Chert.

Ch. Petra, of a solid compact texture; in structure resembling flint, but coarser, and not at all transparent; glossy; and not invested with an outward crust.

Sp. I. Of a white colour.

Sp. II. Of a blue colour.

Sp. III. Of a red colour.

Sp. IV. Of a black colour.

Sp. V. Of a brown colour.

Genus IV. Feltspat.

Ch. Petra, being quartzose chrystal, perfectly opaque; of a solid, yet frequently of a scaley structure; shining, and glossy; and very hard and compact.

Sp. I. Of a red colour.

Sp. II. Of a white colour.

Sp. III. Of a green colour.

Sp. IV. Of a brown colour.

Sp. V. Of a black colour.

Ex:

Ex. An individual, named *quartzum granaticum*, consisting of a black felspat, with pieces of a red one inlayed in it; and found in Sweden.

Genus V. *Marmoroproferon*.

Ch. *Petra*, of a fine and close structure; of elegant colours or colour; admitting a degree of polish; never, or very seldom striking fire with steel; and generally scraping pretty easily with the knife.

Sp. I. Of a green colour.

Ex. An individual, named the serpentine stone, or *ophitis*. Ex. 2. An individual, called one of the nephritic stones, and found at Otaheite.

Sp. II. Of a red colour.

Ex. An individual, of a pale fleshy colour.

Sp. III. Of a yellow colour.

Ex. An individual, called nephritic, and brought from China.

Sp. IV. Of a blue colour.

Sp. V. Of a black colour.

Genus

Genus VI. *Petra vulgaris*.

Ch. *Petra*, of a solid structure; and wanting the characters of felspat, and the other genera of this order.

Sp. I. Of a black colour.

Ex. An individual, of a black colour; of a firm, compact solid structure; interspersed with some shining granules; and found in Sweden, and named the trapstone.

Sp. II. Of a blue colour.

Sp. III. Of a red colour.

Sp. IV. Of a white colour.

Ex. An individual, which is the cinereum album of Da Costa, the cos olearia of Woodward, and commonly called the Turkey stone; of a whitish colour; of a very firm and compact texture; and capable of a tolerable polish.

Sp. V. Of a green colour.

Ex. An individual, of a dull greenish colour; of a light weight, yet of a firm and compact structure; and somewhat glossy; and found in Westmoreland; and called ragstone.

Order

Order VI. Saxum.

Ch. Stone of a granulated structure; and wanting the characters of the other orders of this class.

Genus I. Chrystalline saxum.

Ch. Saxum, consisting of granules of quartzose chrystal, which are pellucid.

Sp. I. Colourless.

Ex. An individual, named the millstone; consisting of granules, transparent, of rather a large size, and blended with some smaller and opaque granules, of a brown colour.

Sp. II. Of a red colour.

Sp. III. Of a brown colour.

Sp. IV. Of a white colour.

Genus II. Saxum vulgare.

Ch. Saxum, consisting of granules, which are opaque.

Sp. I. Of a red colour.

Sp. II. Of a brown colour.

Ex. An individual, consisting of small granules;
of

of a brown colour, of a close texture; and, from its use, named scythe stone.

Sp. III. Of a green colour.

Sp. IV. Of a yellow colour.

Sp. V. Of a blue colour.

Ex. An individual, often called the whin-stone, of a dark bluish colour; of a compact granulated structure; and not glossy nor shining.

Sp. VI. Of a black colour.

Ex. An individual, of a black colour; of a compact granulated structure; set with some shining granules; found in the giant's causeway; and often called a Basaltes. Ex. 2. An individual, of a black colour; of a close compact granulated structure; found at Otaheite, and often called a Basaltes.

Sp. VII. Consisting of numerous shining granules, opaque, but having a splendor resembling the glitter of micæ, and which are found on near examination to compose the whole of the individual. It is of different colours, of a blue, of a black, and of a greenish colour; and often named the whin-stone, and is very frequent in the new pavements of this city.

Genus III. Arenæ.

Ch. Saxum, composed of granules, which are loose and cohere not together, and formed neither of comminuted nor decomposed fossil bodies.

Sp. I. Of a yellow colour.

Sp. II. Of a brown colour.

Sp. III. Of a white colour.

Sp. IV. Of a red colour.

Genus IV. Peastone, or Pisolithus.

Ch. Saxum, consisting of little bodies, which are round and globose.

Order VII.

Stone, of a laminated structure; and which cannot be referred to any other order of this class: or laminated stone.

Genus I. Slate.

Ch. Laminated stone, of a solid structure.

Sp. I. Of a black colour.

Sp. II. Of a red colour.

Sp. III. Of a blue colour.

Sp. IV. Of a green colour.

Sp. V. Of a grey, or ash colour.

Genus II. Flag.

Ch. Laminated stone, of a granulated structure.

Sp. I. Of a brown colour.

Sp. II. of a white colour.

Sp. III. Of a somewhat red colour.

Sp. IV. Of a grey colour.

Genus III. Micæ, or glimmer.

Ch. Laminated stone, in the form of thin plates; of great splendor and glitter; and not scraping with the knife.

N. B. The colours of the individuals are often tarnished, and are of many different shades.

Sp. I. Of a white colour.

Ex. An individual, in the form of small flakes; and of a silver colour, whence named mica argentea. Ex. 2. An individual, named Muscovy glass; consisting of laminæ, which frequently are very large, divisible to a great minuteness, and of a white colour.

Sp. II. Of a yellow colour.

Ex. An individual, found in small flakes; and of a golden colour, whence it is called mica aurea.

Sp. III. Of a black colour.

Sp. IV. Of a green colour.

Sp. V. Of a brown colour.

Order VIII. Stone, of a fibrous structure, which belongs not to any other order of this class, or fibrous stone.

Genus I. Amianthi.

Ch. Stone, composed of fibres which are pliable and soft, when separated.

Sp:

Sp. I. Of a green colour.

Ex. An individual, of a green colour; very glossy; and of a silky soft appearance; found in very short fibres, running in veins through marble and marmoroproseron.

Sp. II. Of a brown colour.

Ex. An individual, of a cinnamon brown colour; with fibres, which are commonly three, but sometimes six inches in length; and found in Brasil.

Sp. III. Of a white colour.

Ex. An individual, of a white colour; with fibres, one, two, or more inches in length; and found in the Pyrenees.

Genus II. Asbesti.

Ch. Stone, composed of fibres, which are hard, rigid and brittle, when separated; and which are not so easily divisible, as the amianthi.

Sp. I. Of a yellow colour.

Sp. II. Of a green colour.

Sp.

Sp. III. Of a black colour.

Sp. IV. Of a brown colour.

Sp. V. Of a white colour.

Ex. An individual, named alumen plumosum, consisting of fibres, which are parallel, rigid, and very brittle; glossy, and of a fine white colour; and the spicula, when rubbed for some time between the fingers, producing very intense pain and itching.

Genus III.

Fibrous stone, whose fibres are not divisible.

Sp. I. Of a blue colour.

Order IX. Stone, composed of a matter, which is not gritty; or gritless stone, if we may be allowed to adopt the term gritless.

Ch Stone, which is soft, and not composed of a gritty matter; hence cutting very easily, and in all directions, without the harshness and grating observed in cutting other stones.

Genus

Genus I. Leatherstone.

Ch. Stone, which is flexible and elastic; and called leatherstone, from its resemblance to leather.

Sp. I. *Aluta montana*; being soft and pliable; and not of a laminated structure.

Sp. II. *Caro montana*; of a laminated structure; and found in Sweden.

Sp. III. *Suber montanum*, or mountain cork; bearing a resemblance to cork.

Genus II. Talcum.

Ch. Stone, soft, and unctuous to the touch; cutting and scraping easily; opaque, yet generally very glossy; and not of a stoney, but of an earthy structure and appearance.

As calcareous matter is found in the state both of an earth and a stone, so is the matter, which composes the individuals of this genus; the same constituting steatites, which is a genus of the earths.

Sp. I. Of a white colour.

Sp. II. Of a red colour.

Sp. III. Of a yellow colour.

Sp. IV. Of a black colour:

Sp. V. Of a fibrous structure.

Ex. An individual, chiefly composed of short fibres; of a greenish cast; and employed for culinary utensils; and hence named lapis ollaris.

Sp. V. Of a laminated structure.

Ex. An individual, named the Venetian talc; composed of fine laminæ; very glossy, and of a green hue. Ex. 2. An individual, of a white colour; dull and opaque; and coarsely laminated.

Ordo X. Compound stones.

Ch. Stones, essentially consisting of more than one kind of stone.

N. B. We refer the puddingstone, which consists only of one kind of stone, to its proper genus.

Genus I. Granite.

Ch. A stone, consisting of felspat, either with micæ, or with pieces of pellucid quartzose chrystal, or with both these, interspersed through, and blended with it.

N. B. We establish the species from the colour of the felspat.

Sp. I. Of a red colour.

Sp. II. Of a white colour.

Sp. III. Of a brown colour;

Sp. IV. Of a yellow colour.

Genus II. Porphyry.

Ch. Stone, consisting of a basis, which is of a strong compact texture; with detached pieces of felspat, embedded in it; and freely striking fire with steel.

N. B. The species are established from the colour of the stoney basis, and not from that of

the felspat: their colours are generally different, tho' they sometimes are the same.

Sp. I. Of a green colour.

Sp. II. Of a red colour.

Sp. III. Of a brown colour.

Genus III.

Stone, which is set with nodules of different kinds.

Sp. I. Of a black colour.

Ex. An individual, named carpolithus; of a black colour, and set with green or white kernels, or nodules, which frequently possess a degree of transparency.

Class III. Inflammables.

Ch. Fossil bodies, which readily take fire and burn.

Genus I. Sulphur.

Ch. An inflammable, which in close vessels sublimes in the form of striæ; in the open air is decomposed by heat into penetrating, acrid, and suffocating fumes; and when deflagrated with nitre, leaves vitriolated tartar.

Sp. I. Of a yellow colour.

Ex. An individual, which is transparent; and is named sulphur pellucidum. Ex. 2. An individual, of a high yellow colour, and opaque.

Sp. II. Of a red colour.

It has an elegant glow; the individuals generally are opaque, but sometimes they are transparent. This species is mixed with a proportion of arsenic. Perhaps this species belongs to the class of cryptometalline fossils.

Sp. III. Of a white colour.

Ex. An individual, found at Solfatara.

Sp. IV. Sulphur ore; being sulphur contained in a stoney basis.

Genus II. Bitumen.

Ch. An inflammable, of a black colour; shining and glossy; brittle, but of a close solid texture; and yielding, when burnt, a strong smell.

Sp. I. Asphaltum, or bitumen judaicum.

Sp. II. Pix montana.

Genus III. Maltha.

Ch. An inflammable, soft and pliable; unctuous and coarse.

Sp. I. Of a black colour.

Sp. II. Of a brown colour.

Sp. III. Peat, before it is dried.

Genus IV. Petroleum.

Ch. An inflammable, which, when pure, is in a fluid form; very inflammable, and burning like oil; and generally of so little specific gravity, as to swim almost in all fluids.

Sp.

Sp. I. Of a greenish colour.

Ex. An individual, found at Sumatra; thin and pellucid; and on burning leaving no residuum.

Sp. II. Of a red colour.

Sp. III. Of a brownish yellow colour, like amber. This species is the most common.

Sp. IV. Of a black colour.

Ex. An individual, which is the Barbadoes oil, being of a black colour, opaque, and thick like treacle. Ex. 2: An individual, which is the British oil; found floating on springs, having ouzed out of the stone, which is its proper nidus: this oil generally is found in a stone of a black colour, and of a granulated structure, which yields it on distillation.

Genus V. Amber.

Ch. An inflammable, which, on burning, gives a peculiar fragrant odour.

Sp. I. Of a yellow colour.

Sp. II. Of a red colour.

Sp.

Sp. III. Of a brown colour.

Sp. IV. Of a white colour.

Sp. V. Of a black colour.

Sp. VI. Colourless.

Genus VI. Ambergrease.

Ch. An inflammable, which when burnt, yields a peculiar fragrant smell. It generally is foul and opaque.

N. B. Ambergrease does perhaps belong to the foregoing genus.

Sp. I. Of a grey colour.

Sp. II. Of a white colour.

Sp. III. Of a black colour.

Sp. IV. Of a brown colour.

Genus VII. Coal.

Ch. An inflammable, of a black colour; breaking generally in an horizontal direction; burning with smoke, into an uninflammable residuum; and much more hard and compact than any other genus of this class, with which it can be confounded.

Sp.

Sp. I. Common cinder coal, burning into cinders, with a thick smoke. Ex. The Durham coal.

Sp. II. Common ash coal; burning into ashes and not into cinders; and not going out, until its inflammable principle is entirely consumed. It is found in Scotland and other countries.

Sp. III. Cannel coal; being of a black jet colour; of a solid and compact texture; breaking in any direction; burning into ashes without much smoke; bearing a very good polish; capable of being turned into a variety of shapes; and not colouring the hands.

Sp. IV. Culm coal; being of a black colour, with a glossy and somewhat metallic splendor; and burning into ashes without much smoke.

Sp. V. Jet; being an inflammable, of a fine black colour; very light; resembling wood in appearance; bearing an elegant polish; and of a solid structure, but sometimes having a grain like wood.

Sp. VI. Stone coal; being stoney; of a dusky blackish colour; and burning freely.

Class IV. Metals.

Ch. Fossil bodies, which have an appearance, named metallic; bright and shining; perfectly opaque; and soluble in mineral acids, or in a combination of them, tho' the assistance of the chymist is often wanted for this purpose; and precipitated by alkali, from their solution in acids, in form of an earth, which, with inflammable substances, can be revived into a metallic appearance.

N. B. The ascertainment of the genera of metals, as also of the genera of the next class, is left to chymical analysis; and we refer the reader to the processes, for this purpose delivered by chymists and metallurgists: we also refer him to any book of chymistry, if he is ignorant of the characters, by which are distinguished the fourteen metals, viz. Gold, Silver, Platina, Iron, Copper, Lead, Tin, Arsnic, Zins, Antimony, Quicksilver, Cobalt, Bismuth, and Nickell.

Genus I. Marcasite.

Pyrites is a synonym of this genus.

Ch. A compound metal, consisting of one or
2 more

more metals, and sulphur; with the assistance of moisture and air, spontaneously and readily decomposing into a metallic earth, and a metallic vitriolic salt; and striking a purple colour, when kept moistened with the tincture of galls, and exposed to the air a certain time.

N. B. If this character does not please the reader, I acquaint him, that the characters commonly given of Marcasite are futile, and that a just character of marcasite is a great desideratum.

Marcasites contain iron and sulphur, or copper and sulphur, or both iron and copper with sulphur; they not unfrequently contain arsenic; also any other metal, lead excepted, along with iron, copper and sulphur.

Sp. I. Of a cubic figure.

Ex. An individual, of a yellow colour; of the figure of a perfect cube; and very common in many places.

Sp. II. Of a pyramidal figure.

Ex. An individual, of a yellow colour, with a pyramid of four sides. Ex. 2. An individual, of a yellow colour, with a pyramid of three sides.

Sp. III. Of a columnar figure.

Ex. An individual, from Redruth, in Cornwall, of a yellow colour in the interior part; consisting of irregular thin longitudinal columns.

Ex. 2. An individual, of a yellow colour; with a short column of four fides.

Sp. IV. The polygonal; having determinate fides, which are various in number and figure; and neither of a pyramidal, columnar nor cubic figure.

Ex. An individual, of a yellow colour; and of large regular facets. Ex. 2. An individual, of a small size; consisting of many fides, which are distinct, tho' not regular; and of various colours, as yellow, purple, pink, green, &c. which frequently are very beautiful.

Sp. V. Of a figure, resembling a wedge; and frequently with notched fides.

Sp. VI. Consisting of small regular planes, laid one above another.

Ex. An individual, of a yellow colour, consisting of thin laminæ, of a square figure. Ex.

2. An

2. An individual, consisting of small tubercles, composed of little thin planes; of a yellow colour; and called blistered marcasite. Ex. 3. An individual, of a yellow colour; of a crustated structure; with a surface wrought over with concentric circular hollows. Ex. 4. An individual, agreeing with the last in all respects, but wrought over with cubical delineations. Ex. 5. An individual, consisting of little thin planes, composing a regular polygonal figure. Ex. 6. An individual, consisting of thin laminae, composing a figure, which is almost a perfect pyramid.

Sp. 7. Of a yellow colour, and not belonging to any of the preceding species.

Ex. Individuals, of a yellow colour; of a globose shape; and of a structure solid, or granulated, or fibrous.

Sp. VIII. Of a red colour, and not belonging to any of the six species, first enumerated.

Sp. IX. Of a blue colour, and not belonging to any of the six species, first enumerated.

Genus II. Gold.

Ch. We have already referred the reader to
L 2 books

books of chymistry, if he wants to know the characters of the fourteen metals.

Sp. I. The native metal; not being mineralized by any other metal, nor by sulphur.

It is found in different forms, in rude pieces, in grains, in plates, in filaments, and in ramifications; and sometimes, tho' very rarely, in regular chrystals.

N. B. We always make the native metal a distinct species, altho' it corresponds in colour with another species.

Sp. II. Of the unnamed colour of metals *.

Sp. III. Of a yellow colour.

This species resembles pyrites, and is said to be gold, mineralized by sulphur.

Genus III. Silver.

Sp. I. The native metal.

It is found in various forms, in rude pieces, in plates of different kinds, in filaments, in ramifications, and in chrystals.

* See page six.

Sp:

Sp. II. A silver ore, of great softness, and cutting as easily as lead; and of different colours and forms.

We are led, by a very respectable authority, to form this species, according to the character we have above employed: but we believe, that the species does not accord with the principles of our system, and that the different individuals belong to the other species of this genus. We shall enumerate certain individuals, mentioned by authors.

Ex. An individual, of a white colour. Ex. 2. An individual, of a green colour. Ex. 3. An individual, of the unnamed colour of metals. Ex. 4. An individual, of a yellow colour. Ex. 5. Individuals, of a prismatic figure: e. g. one individual, which is hexaedra. Ex. 6. Individuals, of a polygonal figure: e. g. one Individual, of the figure of chrystals of alum.

Sp. III. Of a red colour.

This species generally is of a deep rich red colour; of a very glossy splendor; is found figured as well as unfigured; and is mineralized by arsenic.

Sp.

Sp. IV. Of the unnamed colour of metals. The shades of this colour are different; sometimes bright, at other times dull. The grey silver ore, or the *minera argenti grisea* often comes under this species.

Sp. V. Of a white colour.

There is an individual, mineralized with sulphur, arsenic, copper, and iron; and frequently named grey silver ore.

Sp. V. Of a substance, of a sooty black colour, along with a silver ore, of a metallic appearance; the ore, which has the metallic appearance, being of a red, of a white, or of the unnamed colour of metals, and belonging to these species.

Sp. VI. Of a black colour:

This species contains sulphur.

Sp. VII. Of a fibrous structure.

Ex. An individual, named the plumose silver ore, consisting of very fine filaments; glossy, and of a black colour; and mineralized by sulphur and antimony. This individual probably belongs to the genus of antimony; but there are

are others, which cannot be referred to that genus.

Genus IV. Platina.

Sp. I. The native metal, being of a white colour; found in Peru, in the form of small scales, which are separate and loose.

Genus V. Iron.

Sp. I. The native metal.

Doctor George Fordyce is in possession of a specimen, which, I believe, is the only one known certainly to be native iron.

Sp. II. Of a black colour.

It is of many different structures; the granulated, the solid, the laminated, and the scaly. It is mineralized with sulphur.

The individuals of a scaly structure, are of two different kinds; one kind not rubbing into scales; the other kind very easily rubbing into scales, therefore called eisenman; and these scales, in many individuals, are soft and unctuous.

Sp. III. Of the unnamed colour of metals.

This species is of many different structures;

the granulated, the solid, one rather, tho' not properly, striated, the laminated, and the scaley. The individuals of a scaley structure, are of two different kinds; one kind ~~not~~ rubbing into scales, and therefore called eisenman; and these scales in many individuals, are soft and unctuous. One individual of this species, by scraping, changes its colour into a red one.

Sp. IV. Of a red colour.

Ex. An individual, of a high red colour; of a metallic appearance; and found in Scotland, the Hartz, and other parts of Germany. Ex. 2. An individual, of a very glossy splendor, in many parts of a red colour, and in others of a green one; and found in the isle of Elbe, on the coast of Tuscany.

Sp. V. Of a blue colour.

Sp. VI. Of a fibrous structure.

We call it metallic hematites. It is both of the red and the unnamed colour of metals: it frequently is composed of crusts, laying one above another, which are striated.

Sp. VII. Iron sand.

It is found in granules, and in small flakes,
which

which are loose, and often mixed with sand, &c. and is of different colours, as black, red, and the unnamed colour of metals.

Sp. VIII. Manganese; consisting of a substance, which is of a black colour, and which tinges the hands, along with an ore of iron, of the species of the unnamed colour of metals; the structure of this ore being various, as granulated, solid, squamous, and one kind somewhat, but not properly, striated.

Manganese has all the appearance of being the species of the unnamed colour of metals, in part decomposed; when it is wholly decomposed, it is a cryptometalline earth.

Sp. IX. Emery, or smiris; being iron ore in small pieces, mixed with micæ.

Sp. X. Of a form similar to a wedge.

Ex. An individual, of the unnamed colour of metals; with a fine polish; with plates, edged and erect; and found on the island of Elbe, on the coast of Tuscany. Ex. 2. An individual, to wit, the English; of a rusty iron colour.

Sp. XI. The polygonal; having determinate sides, which are not regular in number, figure, and colour.

Genus VI. Copper.

Sp. I. The native metal.

It is found in various forms, in rude pieces, in plates, in filaments, and in cubes.

Sp. II. Of the unnamed colour of metals.

This species commonly is named the grey, and the vitreous, or glass copper ore: the shades of this colour are various; being bright, dull, and sometimes approaching to white. The individuals frequently are tarnished of different colours, but the colour of the species reappears on their being cut: they are mineralized with sulphur, and often with iron.

Sp. III. Of a red colour.

Ex. An individual, of a fine glossy red colour; and found both in distinct figures, and in indeterminate pieces.

Sp. IV. Of a white colour.

Ex. An individual, of a white colour; known among some authors, by the name of grey copper ore.

Sp. V. Of a purple, or blue colour.

Ex. An individual, of a vivid purple colour, throwing out a fine lustre, and often called by the name of peacock copper ore. Ex. 2. An individual, of a dull blue colour.

Sp. VI. Of a yellow colour.

The colour of this species generally is a very high one. There is an individual, somewhat of the colour of Bismuth, mineralized by iron and sulphur, and which is the liver-coloured copper ore of many authors. The individuals of this species, the liver coloured copper ore excepted, are referred by many fossilists to the genus marcasite.

Genus VII. Lead.

Sp. I. Native lead.

Sp. II. Of a laminated structure.

Ex. An individual, named the potter's lead ore; composed of thin square laminæ; mineralized with sulphur; and containing a small portion of silver. Ex. 2. An individual, of the unnamed colour of metals, composed of indeterminate scales; and mineralized by sulphur.

Sp. III. Of a solid structure.

Ex. An individual of a solid structure, but consisting in appearance of little distinct pieces, which are very bright and glaring, when it is called stargrained lead ore; and of the unnamed colour of metals. Ex. 2. An individual, of a solid structure; in the form of ramifications; of the unnamed colour of metals; and mineralized by sulphur.

Sp. IV. Of a granulated structure.

Ex. An individual of the unnamed colour of metals; and of a compact granulated structure; and mineralized by sulphur.

Sp. V. Of a fibrous structure.

It is mineralized with sulphur, and antimony, and contains some silver.

Sp. VI. Of a pyramidal figure.

Ex. An individual, of the unnamed colour of metals; being a detruncated pyramid of four sides and mineralized by sulphur.

Sp. VII. Of a cubic figure.

Genus. VIII. Tin.

Sp. I. The native metal.

There is great reason to suspect that the specimen offered of native tin, is artificial.

Sp. II. and III. Very probably come under order III. of class V.

Sp. II. Of a black colour. This always is very glossy ; and is mineralized with arsnic.

Ex. An individual of a granulated structure.

Ex. 2. An individual of a solid structure. Ex.

3. An individual with minute fibres.

Sp. III. Tin sands ; being granules of the foregoing species, blended with sand and other kinds of granules.

Genus IX. Arsnic.

Sp. I. The native metal.

It soon becomes black in the air : it sometimes is of a scaly and kidney-like structure ; and frequently is called the Scherbencobalt.

Sp. Of

Sp. II. Of a white colour.

It is named mispickel ; and is found in various forms, in rude pieces, and in both regular and irregular figures ; and is mineralized by iron. It is also found of a white colour and mineralized with sulphur.

Genus X. Zinc.

Sp. I. Of a black colour.

Its colour is always glaring ; it is called blende and black jack by many authors ; and is mineralized by sulphur, and often contains iron.

Ex. An individual of a solid structure ; of a very glaring black colour ; and formed into irregular facets. Ex. 2. An individual of a glossy black colour ; consisting of large irregular plates, somewhat like potter's lead.

Sp. II. Of the unnamed colour of metals.

Sp. III. Of a white colour.

Ex. An individual, consisting of thin laminæ ; of a glossy silver colour ; colouring the hands like black lead.

Genus

Genus XI. Antimony.

Sp. I. The native metal. It is of a white or silver colour.

Sp. II. Of a fibrous structure.

It is mineralized by sulphur. Ex. An individual, of the unnamed colour of metals; glossy; and composed of fine needles. Ex. 2. An individual, named the plumose, composed of very fine hairs; and of a deep shade of the unnamed colour of metals. Ex. 3. An individual, of the unnamed colour of metals; glossy; and with striæ flat and depressed.

Sp. III. Of a solid structure.

Ex. An individual, of the unnamed colour of metals, and of a very dull appearance, and mineralized by sulphur.

Sp. IV. Of a granulated structure.

Ex. An individual, of the unnamed colour of metals, and mineralized by sulphur.

Sp. V. Of a laminated structure.

Ex.

Ex. An individual of the unnamed colour of metals, and mineralized by sulphur.

Genus XII. Quick-silver or hydrargyrum.

Sp. I. The native metal.

Granules of native quick-silver, are found interspersed in various substances; sometimes small cavities in fossil bodies are filled with this metal; sometimes the native metal is not visible, until it is pressed out from the bodies, in which it is contained.

Sp. II. An amalgam of quick-silver, and silver.

Genus XIII. Cobalt.

Sp. I. Of a white colour.

It is mineralized by arsenic.

Genus XIV. Bismuth.

Sp. I. The native metal.

It is found in grains, flakes, and crusts, and is of a yellowish colour.

Sp. II. Of a blue, or purple colour:

This species seems to be the same with the foregoing, and to owe its colour to something accidental.

Sp. III. Of a white colour.

Ex. An individual, of a white colour; interspersed in the form of delineations, through a stone of a brown colour, and of a solid texture.

Sp. IV. Of a laminated structure:

Ex. An individual, in colour like a gross potter's ore; composed of thin square scales; and mineralized with arsenic and cobalt. Ex. 2. An individual, composed of large scales, of a pyramidal figure; and mineralized with sulphur and iron.

Genus XV. Nickell.

Sp. I. The native metal.

Sp. II. Of a yellow colour.

It is said to be mineralized by arsenic, sulphur, iron, and copper.

Genus XVI. Molybdæna, or black lead.

Ch. Desideratur.

N

Sp.

Sp. I. Of the unnamed colour of metals; this colour appearing, when this species of molybdæna is fresh cut.

Ex. An individual, glossy and shining; of the unnamed colour of metals; tinging the hands; and found at Keswick, in Cumberland.

Sp. II. Of a laminated structure.

Ex. An individual, consisting of large plates, which are divisible, flexible, and very unctuous; and found in America, and at Altenburg, in Saxony.

Class V. Cryptometalline Fossils.

Ch. Fossil bodies, having no appearance of metals, yet containing them in such a quantity, that they may be called metallic bodies, or ores of metals.

Many objections may arise against the establishment of this class, and the orders into which it is divided; as many as I am acquainted with, I have maturely weighed, and find almost all of them no more valid than ropes of sand. A strong objection lies against our separating bodies, partaking of the same metal, into three different orders; but method, to which nature, for the sake of advantage, is, in fossilogy, to be sacrificed, required this; nor can any inconvenience ensue, if the young fossilist will first read the characters of the orders, and afterwards proceed with one metal through its several genera, in the different orders of this class, before he investigates another.

Order I. Cryptometalline stone.

Ch. Cryptometalline fossils, whose component parts do not imbibe water; and which fall not into a loose mass, nor, when gently rubbed between the fingers, are divisible, after they

have been soaked a sufficient time in water; not figured, nor shining and glossy, nor transparent.

N. B. The calces of metals, when these are spontaneously decomposed, frequently answer to the above character; they neither imbibing water, nor falling into a loose mass, nor being properly divisible, by gentle rubbing between the fingers, after they have laid for some time in water: nor can they be considered in a false light, by then arranging them under this order, which is our design. The individuals of this order, for the most part, are either calces, or have the common appearance of stones, of a close compact structure.

Genus I. Iron stone.

Sp. I. Of a red colour.

Ex. An individual, named ruddle.

Sp. II. Of a brown colour.

Sp. III. Of a black colour.

Sp. IV. Of a fibrous structure.

We call this species stone hematites.

Sp. V. Of a crustrated structure.

The individuals of this species are numerous; they are of a brown, of a red, and of a yellow colour. There are small round iron stones of this

this structure; such are bezoar mineral, and the pea-like iron ore. Iron incrustations on shells, and other substances are frequently found on the coasts.

Genus II. Copper stone.

Sp. I. Of a blue colour.

Ex. An individual, which is a calx, and not an earth, or ochre.

Sp. II. Of a green colour.

Ex. An individual, which is a green calx, and frequently found on the outside of copper ores.

Sp. III. Of a black colour.

Ex. An individual, which is lodged in, and combined with a soft slate, consisting of very thin laminæ; of a blackish colour; and found in the Dutchy of Brunswic. Ex. 2. An individual, being a hard and compact slate; of a black colour; and found in Illeb, and other parts of Germany.

Sp. IV. Of a brown colour.

Sp. V. Of a red colour.

Ex. An individual, which is a calx, of a glass copper

copper ore; found in the province of Dal, and at Ostanberg, in the province of Dalarn. Cronsted.

Genus III. Lead stone.

Sp. I. Of a green colour.

Sp. II. Of a white colour.

Sp. III. Of a red colour.

Sp. IV. Of a brown colour.

Sp. V. Of a blue colour.

Sp. VI. Of a yellow colour.

Sp. VII. Of a black colour.

Genus IV. Tin stone.

The species generally are established from specimens of shoals, boulders, &c. and are mineralized with arsenic.

Sp. I. Of a blue colour.

Sp. II. Of a brown colour.

Genus V. Antimony stone.

Sp. I. Of a fibrous structure.

Ex.

Ex. An individual, of a red colour; and mineralized by arsnic.

Genus VI. Zinc stone.

Sp. I. Of a yellow colour.

Ex. An individual named calamine.

Sp. II. Of a red colour.

Ex. An individual named calamine.

Sp. III. Of a brown colour.

Ex. An individual named calamine.

Sp. IV. Of a green colour.

Ex. An individual named calamine.

Genus VII. Quicksilver stone.

Quicksilver in its cryptometalline state is mineralized with sulphur; and commonly is called cinnabar.

Sp. I. Of a red colour.

Ex. An individual, of a scarlet colour; of a solid and pretty compact texture; the most common of the cinnabars.

Sp.

96 ELEMENTS OF

Sp. II. Of a black colour.

Sp. III. Of a yellow colour.

Genus VIII. Cobalt stone.

Sp. I. Of a red colour.

Ex. An individual, of a red colour; being a calx; and found on the surfaces of cobalt ores; and mineralized with arsenic. Ex. 2. An individual of a pink colour, being a calx.

Sp. II. Of a blue colour.

Sp. III. Of a black colour.

Ex. An individual, which is a calx. Ex. 2. An individual hard and stoney, and of a black colour.

Sp. IV. Of a green colour.

Sp. V. Of a yellow colour.

Sp. VI. Of a brown colour.

Ex. An individual which is a calx.

Sp. VII. Of a white colour.

Genus IX. Nickel stone.

Sp. I. Of a green colour.

It

It is found in a powder, and in a concrete form ; and probably is a cryptometalline stone, being a calx, and not an earth.

Genus X. Arsnic stone.

Sp. I. Of a black colour.

Ex. An individual, which is a calx, and found on native arsnic.

Order II. Cryptometalline earth.

Ch. Cryptometalline fossils, whose component parts imbibe water ; and which either fall down into a loose mass, or, when gently rubbed between the fingers, are divisible, after they have been soaked a sufficient time in water.

Cryptometalline earth, which is of an elegant colour, and tinges the hands, is called ochre.

Genus I. Silver earth.

There are many species of silver Cryptometalline earths, but they are not accurately noted.

Sp. I. Of a yellow colour.

O

Ex.

Ex. An individual named the *stercus anserinum* from its resemblance to this substance.

Genus II. Iron earth.

Sp. I. Of a black colour.

Ex. An individual, being a black footy ochre, and formed by the perfect decomposition of the manganese, which is a species of the metal iron.

Sp. II. Of a red colour.

Ex. An individual, which is an ochre. **Ex. II.** An individual, of a fine red colour; so soft, as to be kneaded like clay; very greasy and unctuous; colouring the hands; found chiefly in the mines of Cumberland, and called the Smit.

Sp. III. Of a brown colour.

Ex: An individual, which is an ochre.

Sp. IV. Of a blue colour.

Ex. An individual, which is an ochre.

Genus III. Copper earth.

Sp.

Sp. I. Of a yellow colour.

Sp. II. Of a grey colour:

Sp. III. Of a brown colour.

Sp. IV. Of a green colour.

Ex. An individual, which is an ochre.

Genus IV. Lead earth.

Sp. I. Of a white colour.

Ex. An individual, named the native Cerufs.

Sp. II. Of a yellow colour.

Ex. An individual, which is an ochre. Ex. 2.
An individual, named the masticot.

Sp. III. Of a brown colour.

Ex. An individual, which is an ochre.

Sp. IV. Of a red colour.

Genus VI. Quicksilver Earth.

Sp. I. Of a red colour.

Ex. An individual, being lodged in and combined with a clay ; and of a red colour.

Sp. II. Of a blue colour.

Sp. III. Of a white colour.

Genus VII. Cobalt earth.

Sp. I. Of a blue colour.

Ex. An individual, being lodged in and combined with a blue clay ; and found in Wermerland in Sweden.

Sp. II. Of a red colour.

Ex. An individual, named cobalt bloom, being an ochre ; and found in a loose or friable form.

Sp. III. Of a black colour.

Ex. An individual, being lodged in and combined with a black clay, and found in the Dutchy of Wurtemberg.

Sp.

Sp. IV. Of a yellow colour.

Ex. An individual of a white colour; light, soft, and in the form of clots; found in the Dutchy of Wurtemberg; and generally with a green glance on the surface.

Genus VIII. Tin earths.

Genus IX. Arsnic earth.

Sp. I. Of a white colour.

Ex. An individual of a white colour; in a loose form like floor: and which I imagine to answer to the characters of a cryptometalline earth.

Order III. Cryptometalline flos.

Ch. Cryptometalline fossils, which are transparent or subtransparent; or which resemble spar chrystal or pure fluor of any kind; or which are figured or nearly so; or which have a perfectly glossy shining appearance; the name of flos being applicable to any one of these states.

Genus I. Silver flos, or flos argenti.

Sp. I. Of a red colour.

Ex. An individual, which is transparent, of a very glossy splendor; of a red colour; and mineralized with arsnic.

Sp. II. Horn silver ore, or *minera argenti cornea*; being a compound of silver and the muriatic acid; frequently semi-transparent, and having a resemblance to horn.

This species is said to be without the fossilological character of salts; and is of various colours, as whitish, greenish, red, brown, and purple.

Genus II. Iron flos or *flos ferri proprius*.

Sp. I. Of a red colour.

Ex. An individual, very glossy; of a laminated structure; and mineralized with arsnic.

Sp. II. Of a brown colour.

Ex. An individual, of a brown colour, very glossy, of a laminated structure; and mineralized with arsnic.

Sp. III. Of a grey colour.

Ex.

Ex. An individual, of a greyish colour; very glossy; of a laminated structure; and mineralized with arsenic.

Sp. IV. Of a black colour.

Ex. An individual, of a black colour; of a laminated structure; very glossy; and almost of a metallic appearance.

Sp. V. Of a fibrous structure.

This species we call flos hematites.

Ex. An individual, very glossy, but opaque; of a black colour; and composed of crusts, which are striated, lying one above another.

Sp. VI. Of a columnar figure.

There is one particular individual, consisting of rude irregular columns, which lie parallel; called brush iron ore; and found in the forest of Dean. The individuals of this species frequently have pretty regular columns, and a degree of transparency.

Genus III. Copper-flos, or flos cupri.

Sp. I. Of a green colour.

Ex.

Ex. An individual, named Malachites; hard and compact; admitting a fine polish; glossy; and of an elegant green colour. Ex. 2. An individual, in the form of knobs or buttons, whence it is named; of a striated structure, the striæ proceeding from the center to the circumference; glossy like silk; and of a very elegant appearance.

Sp. II. Of a blue colour.

Ex. An individual, known by the name of the lapis lazuli; which is said likewise to contain silver.

Sp. III. Of a red colour.

Ex. An individual, of a red colour; on account of its colour called sealingwax copper ore; and of a glossy appearance.

Genus IV. Lead flos, or flos plumbi.

Sp. I. Colourless.

Ex. An individual, of a rhombic figure, or breaking into rhombs. Ex. 2. An individual, in regular oblong planes. Ex. 3. An individual, of a laminated structure, and found in the Hartz.

Ex.

Sp.

Sp. II. Of a white colour.

Ex. An individual, of a white colour, and composed of lamellæ, after the manner of the plated fluors.

Sp. III. Of a green colour.

Ex. An individual, of a green colour; of a glossy appearance, and somewhat transparent; and mineralized with arsenic.

Sp. IV. Of a columnar figure.

Many individuals of this species have no regular sides.

Ex. An individual, of a white colour, with a column of six sides. Ex. 2. An individual, composed of capillary columns, or needles. Ex. 3. An individual, consisting of short columns; of a green colour, and transparent; frequently having a red calx upon its surface; and mineralized with arsenic.

Genus V. Tin flos, or flos stanni.

The species have a glossy appearance; and are frequently found in different kinds of figures: some of the species are transparent, and others

P

are

are opaque; the individuals are mineralized with arsenic.

Sp. I. Of a black colour.

This species is very frequent; the individuals are found in chrystalized forms, and unfigured, of a solid, a granulated, and a fibrous structure, and in the form of sands.

Sp. II. Of a red colour.

Sp. III. Of a brown colour.

Sp. IV. Of a white colour.

Ex. An individual, the quartzose; being semi-transparent, and exactly like unfigured quartzose chrystal; and found at Toeplitz, in Bohemia.

Genus VI. Flos arsenici, or arsenic-flos.

Sp. I. Of a white colour.

Ex. An individual, of a white colour, and transparent as glass; and found in the Hartz, and in Saxony.

Sp. II. Of a red colour.

It is mineralized with sulphur; called realgar or sandarack;

sandarack; and is always glossy, but not always transparent.

Sp. III. Of a yellow colour.

Ex. An individual, of a bright and beautiful yellow colour; and of a scaly structure; and named orpiment.

Genus VII. Quicksilver flos, or flos argenti vivi.

Sp. I. Of a red colour.

Ex. An individual, of a high red colour; with small plates, which are glossy, and transparent.

Ex. 2. An individual, of a red colour; very glossy; and of a pyramidal figure.

Genus VIII. Zincflos, or flos zinci.

Sp. I. Of a yellow colour.

Ex. An individual, of a yellow colour, like wax; transparent, or glossy; of a solid structure, and compact; and being one of the calamines.

Ex. 2. An individual, of a yellow colour,

and very glossy; of a scaly structure; and mineralized by sulphur; and often contains iron.

Sp. II. Of a red colour.

Ex. An individual, of a red colour, and a scaly structure; and mineralized by sulphur; and often contains iron.

Sp. III. Of a brown colour.

Ex. An individual, named the philemot, of a russet colour; of a scaly texture; and mineralized by sulphur; and often contains iron.

Sp. IV. Of a black colour:

Ex. An individual, of a black colour; shining and glossy; and of a scaly structure.

Sp. V. Of a green colour.

Sp. VI. Of a white colour.

Sp. VII. Figured flos Zinci.

This species is found at Holywell, in Flintshire; and is of a brown colour.

Ex. An individual, of a pyramidal figure, tho' it is not a very regular one. Ex. 2. An individual,

individual, in the form of oblong planes. Ex. 3. An individual, of a globular shape, exteriorly formed into several determinate sides.

Genus IX. Cobalt-flos, or flos cobalti.

Sp. I. Of a red colour.

Ex. An individual, in the form of plates; of a red colour; and transparent. Ex. 2. An individual, named cobalt blood; of an elegant red colour; of a fibrous structure, consisting of fine capilli.

Genus X. Basaltes, or shirl, or cockle.

Character desideratur.

It is mineralized with iron and other metals.

Sp. I. Of a solid texture.

Sp. II. Of a fibrous structure.

The individuals are of a black, green, and a white colour; the fibres being in various directions.

Sp. III. Of a granulated structure.

Sp. IV. Of a laminated structure.

Sp.

110 ELEMENTS OF

Sp. V. Of a columnar figure.

Ex. Individuals, of irregular sides, and of different colours, as black, green, or brown.

Sp. VI. Of a pyramidal figure.

Sp. VII. Of a columnar, and pyramidal figure.

Ex. An individual, of a black colour, and glossy; consisting of a column of six sides, and a pyramid of three.

Class VI. Salts.

Ch. Fossil bodies, which are soluble in water; and which have taste.

Ordo I. Acids.

Ch. Salts, which have a sour taste, and which change the purple juices of vegetables into a red colour.

Genus I. Vitriolic acid.

Ch. An acid, decomposing calcareous absorbent earth, combined with any other acid, and forming therewith gypsum:

Sp. I. In a fluid form.

Order II. Alkalies:

Ch. Salts, of a peculiar taste, and changing the purple juices of vegetables into a green colour.

Genus I. Fossil alkali.

Ch. An alkali, readily shooting into crystals of a rhombic form.

Sp.

Sp. I. The natron; being found in crusts upon the waters of a lake in Egypt, and upon the walls of old buildings.

Sp. II. Of a yellowish brown colour; found in the form of a powder, on the banks of the river Hermus, nigh Smyrna, where it is made into a fine soap.

Genus II. Volatile alkali.

Ch. An alkali, of a pungent smell, and which wholly sublimes in no great degree of heat; and which readily strikes a blue colour, with a salt of copper.

“Volatile alkali is discovered, not only in most parts of the clays, but likewise in the sublimations at Solfatara, near Naples.” Cronsted.

Order III. Metallic neutral salts, or neutral salts, consisting of an acid and a metal.

Ch. Neutral salts, which in solution, strike a ~~purple~~ colour, with a tincture of galls; and, on the addition of an alkali, let fall on earth, which with proper inflammable substances, can be revived into a metal.

N. B. Metallic neutral salts are sometimes blended together, but one salt or other is then found

found in a greater quantity, and points out the genus, in which they are to be arranged.

Genus I. A neutral salt of copper, and the vitriolic acid: or blue vitriol.

Ch. A metallic neutral salt, of a blue colour; the smallest portion of it dissolved in water, striking a blue colour with volatile alkali; and the acid being precipitated in an insoluble salt, along with lead, when a salt, consisting of lead, and any other acid is added to the solution.

Sp. I. Unfigured, and of a blue colour.

Sp. II. A stalactite.

Sp. III. Vitriolic earths, of different colours.

Sp. IV. Vitriolic stones, of different colours.

Sp. V. Contained in mineral waters.

Genus II. A neutral salt of copper, and the muriatic acid.

Ch. A metallic neutral salt, the smallest portion thereof dissolved in water, striking a blue colour, with volatile alkali; and the muriatic acid, being precipitated in an insoluble salt, along with silver, when a salt, consisting of silver, and any other acid is added to the solution of this salt in water.

Sp. I. Contained in mineral waters.

Genus III. A neutral salt of iron, and the vitriolic acid : or green vitriol.

Ch. A metallic neutral salt, of a green colour; striking a deep purple colour, with an infusion of galls; and a salt, which is a compound of the vitriolic acid and lead, and insoluble in water, being precipitated on the addition of a salt, consisting of lead, and any other acid.

Sp. I. Unfigured, and of a green colour,

Sp. II. A stalactite.

Sp. III. Vitriolic earths; being of different colours.

Sp. IV. Vitriolic stones; being of different colours.

Sp.

Sp. V. Of a fibrous structure.

Ex. An individual, which is like flocks of wool.

Genus IV. A neutral salt of iron, and the muriatic acid.

Ch. A metallic neutral salt, striking a deep purple colour, with an infusion of galls; and a salt, which is a compound of the muriatic acid and silver, and insoluble in water, being precipitated on the addition of a salt of silver, and any other acid.

Sp. I. Contained in mineral waters.

Genus V. A salt of vitriolic acid and zinc.

Ch. A metallic neutral salt, which in solution is precipitated by the vegetable alkali, of a white colour; the precipitate, when melted with a little copper, and some inflammable substance, forms brass; and a salt, which is a compound of the vitriolic acid and lead, and insoluble in water,

water, is precipitated on the addition of a salt, consisting of lead, and any other acid.

Sp. I. Colourless.

Sp. II. Of a white colour.

Sp. III. Of a red colour.

Sp. IV. A stalactite.

Sp. V. Contained in mineral waters.

Genus VI. A neutral salt of nickell, and the vitriolic acid.

Genus VII: A neutral salt of Nickell, and the muriatic acid.

A query arises, whether this genus exists.

Genus VIII. A neutral salt of quicksilver, and the muriatic acid.

Genus IX. A neutral salt of quicksilver, and the vitriolic acid.

Ordo IV. Earthy neutral salts.

Ch. Neutral salts, which are composed of an acid, and an earth; whose earth is precipitated
on

on the addition of any mild alkali; and which strike not a purple colour with the tincture of galls.

Genus I. A neutral salt, consisting of the vitriolic acid, and a calcareous earth; or gypsum.

Ch. Neutral salt, whose earth is precipitated by a mild alkali, but not by the caustic volatile alkali.

Sp. I. In a solid form; in which state we have considered it as a stone; its character of a salt not being sufficiently apparent.

Sp. II. Contained in mineral water, and in common water.

Genus II. A neutral salt, consisting of magnesia, and the vitriolic acid.

Ch. A neutral salt, whose earth is precipitated by caustic volatile alkali.

Sp. I. Contained in the sea, and in mineral waters.

Sp. II. In a solid form.

Genus

Genus III. Common alum.

Ch. A neutral salt, consisting of the vitriolic acid, and a clayey earth; and changing the purple juices of vegetables into a red colour.

Sp. I. Unfigured.

Sp. II. Of a fibrous structure; being plumose, or feather-like.

Sp. III. Aluminous stones.

Sp. IV. Aluminous earths; being clays, and earths of different kinds.

Order V. Alkaline neutral salts; or neutral salts, consisting of an acid and alkali.

Ch. Neutral salts, which are not decomposed by mild volatile alkali, added to their solution,

Genus I. Sal glauberi.

Ch. An alkaline neutral salt, whose chrystals are hexaedral, and contain a great portion of
I water,

water, spontaneously calcining in the open air; and which is composed of the vitriolic acid, and of fossil alkali.

Sp. I. Contained in mineral waters.

Genus II. Common salt.

Ch. An alkaline neutral salt, decrepitating in the fire; its chrystals being of a cubic form; and composed of the muriatic acid and fossil alkali; and its acid arising in white fumes, on mixing with the dry salt concentrated vitriolic acid.

It is generally found in large bulks, in the bowels of the earth, when it is called rocksalt; and generally is transparent.

Sp. I. Colourless.

Sp. II. Of a red colour.

Sp. III. Of a white colour.

Sp. IV. Of a blue colour.

Sp. V. Of a yellow colour.

Sp. VI. Of a striated structure.

Sp. VII. Contained in the sea, and in mineral waters.

Genus

Genus III. Common fal ammoniac.

Ch. An alkaline neutral salt, composed of muriatic acid, and volatile alkali; volatile in a small degree of heat; whose alkali is extricated in pungent vapours, on the admixture of quicklime; and whose acid is extricated in white fumes, on pouring concentrated vitriolic acid upon it.

Sp. I. Of a white colour.

Sp. II. Of a red colour.

Sp. III. Contained in mineral waters.

Sp. IV. Sublimed from volcanoes, of various colours, as white, red, green, black; and being generally very impure, containing sulphur, &c.

Genus V. A neutral salt, consisting of fossil alkali, and the nitrous acid: or cubic nitre.

Ch. An alkaline neutral salt, which in fusion detonates on the addition of an ignited inflammable substance; and when deflagrated with sulphur, leaves Glauber's salt.

F I N I S.



Edwards, George

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